

Joint Research Centre (JRC)



Institute for Environment and Sustainability (IES)

Climate Change **Policy developments and Role of Future Research**

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Director

The mission of the Institute for Environment and Sustainability is to provide scientific-technical support to the European Union's Policies for the protection and sustainable development of the European and global environment.




Customers: EC, EEA, EP, Member States, Global Organisations

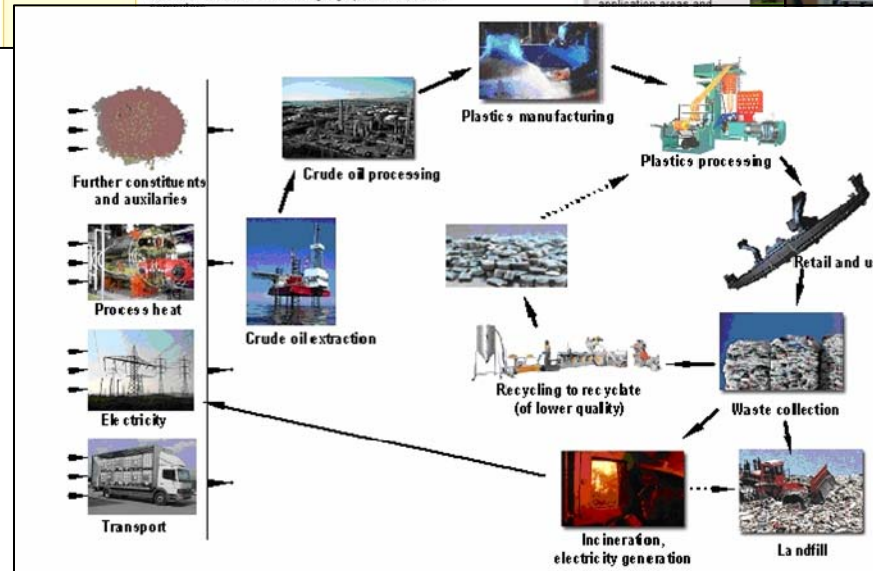
INSPIRE

Sustainable Transport

Life Cycle Assessment



The screenshot shows the INSPIRE Community Geoportal website. The header includes the INSPIRE logo and the text "INSPIRE the EU portal for Geographic Information". Below the header, there are sections for "quick links", "INSPIRE Community Geoportal", "Welcome", "Information Tours", and "Themes". The "Welcome" section contains a paragraph about the portal's purpose and a note that it does not store or maintain data. The "Information Tours" section provides a brief overview of the portal's capabilities. The "Themes" section lists various geographic information topics available on the portal.



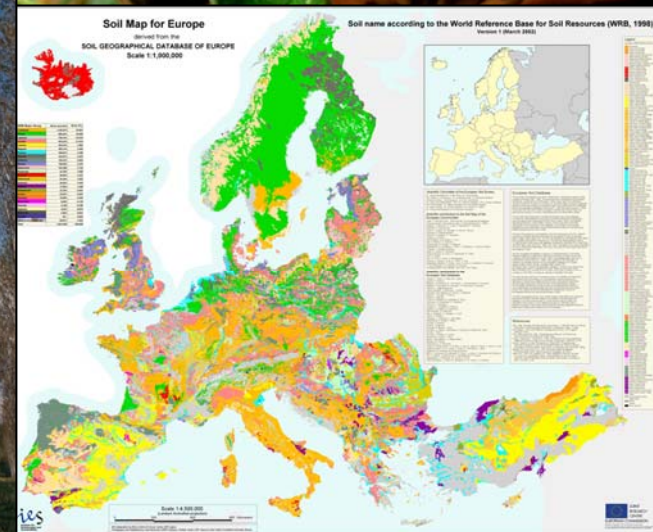
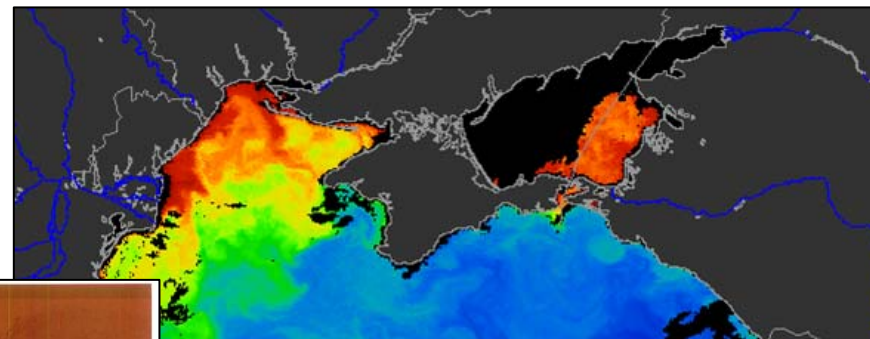
Marine Environment

Water Quality

Agri-environment

Soil and Forest Data Centres

Greenhouse Gas Inventories



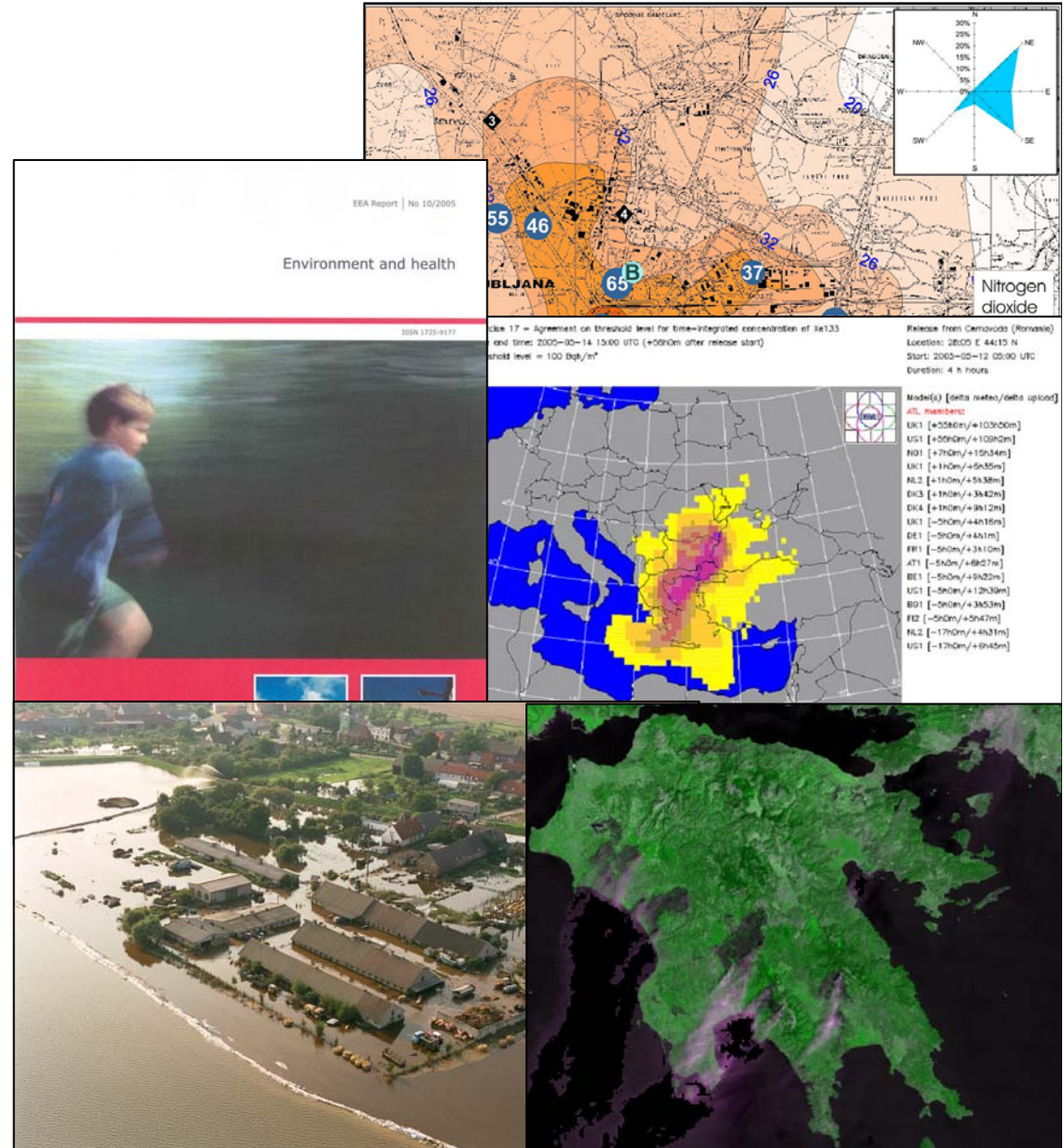
Environmental Pollution

Radioactivity Monitoring

Environment and Health

Floods & Droughts

Forest Fires



**RESEARCH AT JRC
in support of EU
CLIMATE CHANGE
policy making**

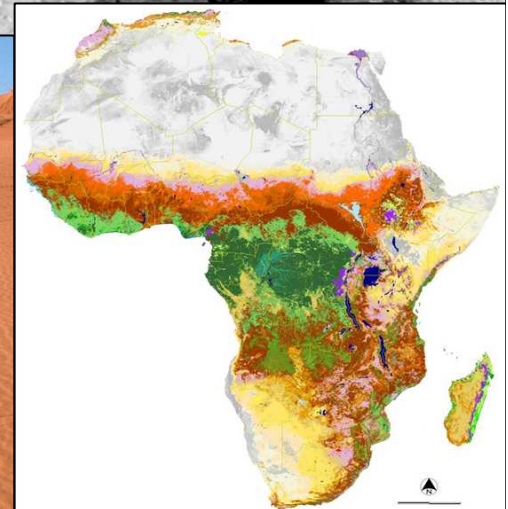
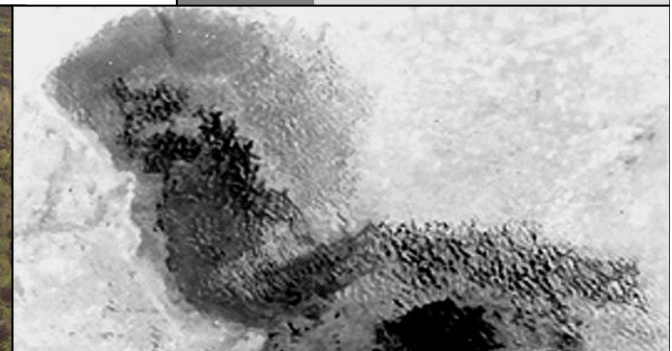
Climate Change

KOPERNIKUS

Deforestation

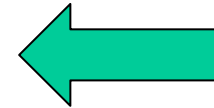
Desertification

Support to Africa



2007/8: The years the climate for Climate Change changed

- The warm winter of 2006-2007
- The 4th Assessment Report of the IPCC
- Al Gore and Hollywood



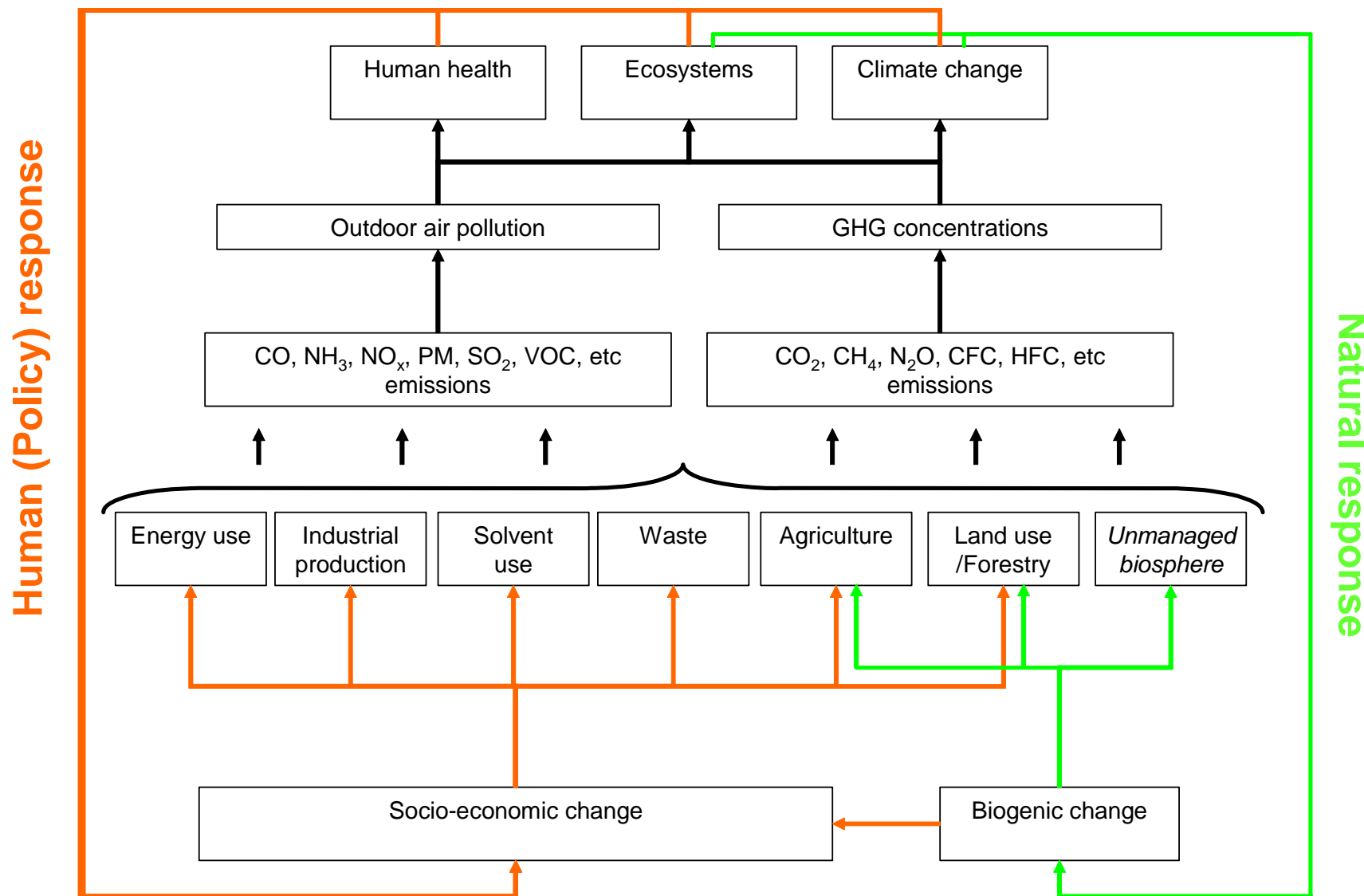
The Nobel Prize for Peace

The JRC PESETA* study on costs of climate change

The EU Council Decision

The Bali Conference UNFCCC

* Projection of Economic impacts of climate change in Sectors of the European Union based on bottom-up Analysis



See also: The new EEA-JRC-WHO Report on Climate Change Impacts in Europe, 2008

- Increased need for **water** in agriculture will trigger competition of sectors
- Higher temperatures and extreme precipitation will damage **soil organic carbon stocks** ⇒ increased CO₂ emissions from soil
- Though most EU **forests** grow faster than 100 years ago, a changing climate will favour shifts in **species distribution** of vegetation.
Drought periods + warm winters ⇒ higher levels of **pests**
- In a warmer climate, risk of fire will increase and, as a consequence, more area is likely to be burned with longer “**forest fire seasons**”
- EU policies reducing air pollution are effective, but regional warming slows down decrease of **ozone** precursors near ground

1 MITIGATION

GHG emission reduction technologies

- End-use energy efficiency
- PV, renewable H₂, biofuels
- Nuclear fission
- Agricultural soils and forest management (incl. deforestation)

2 ADAPTATION

- Exposure and sensitivity to extreme weather, floods, droughts, fires
- Exposure to increased air pollution and diseases in a warmer climate
- Loss of carbon from soils and other stocks
- Change in water quality

3 SCENARIO MODELING

- Links *between* socio-economic change and atmospheric and land-use change (deforestation)
- Provide consistent GHG emission scenarios
- Study alternative scenarios (effect of policies)

4 MONITORING & VERIFICATION

- EU and global GHG Inventory System
- Contribute to Global Climate Observing System
- Monitor the effect of policies on EU business

- **More integration of natural and socio-economic sciences**
Climate research = Sustainability research
- **How to integrate Mitigation and Adaptation?**
Synergies, trade-offs
- **Regional/Local climate impact studies**
Incl. small countries, even individual cities
- **Cost Effectiveness Analysis**
Post-Kyoto Emission reduction strategies
Cost of adaptation measures

- **Climate Change policy aims at reducing the risk of climate change effects at the **least cost** and **largest equity** among states**
- **Climate Change Policy = Mitigation + Adaptation**
 - Less mitigation now, more adaptation later
 - = The expensive option (Stern, IPCC)
 - Mitigation now, less adaptation later
 - = The cheapest option (Stern, IPCC)
- **EU two degrees target (1996)**
- **Climate Change Policy = Opportunity to modernize society !**

- Emissions come from the same sources
- Some abatement technologies for one pollutant increase emission of others
- Well chosen greenhouse gas reduction improves local and regional air quality
- **But:** *reducing particulate emissions may enhance warming of climate*

Thank you!



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